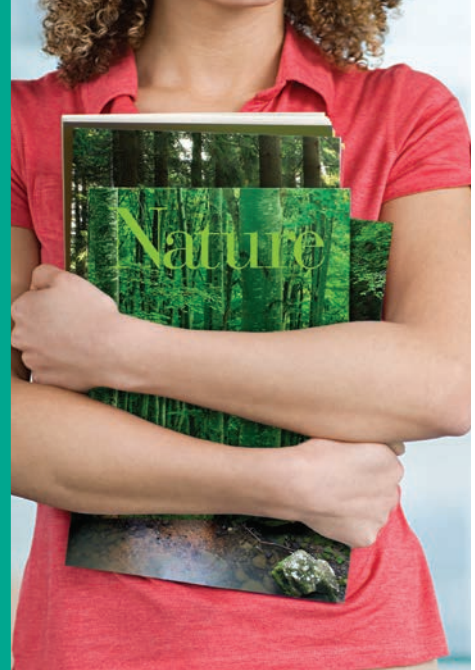


# Ink Resins, Alkyds, Varnishes and Additives Product Guide

Europe



**Lawter™** is a leading global supplier of quality raw materials for the printing ink industry. We provide ink manufacturers with specialty products including resins, alkyds, vehicles and varnishes, wax compounds and additives for offset and liquid inks.



*Resin, alkyd and wax compound for offset printing inks.*

## Research and development:

We work in close cooperation with our customers to improve results and create value. History proves that this collaboration achieves the required performance. We have a proud history of creating innovative and successful solutions, meeting our customers' requirements. Our total organization is committed to supporting our customers' drive for success, and we believe that our combined strength is the most efficient method of advancing the industries we serve.



## Brief description of test methods

### Viscosity

Viscosity is measured with a rotational rheometer using a cone and plate. Materials tested include hard resins, alkyds and varnishes. A solution of hard resin is first made in a specified solvent or vegetable oil by using a Thermotronic (Novomatics GmbH). The viscosity of alkyds and varnishes are measured neat.

Another method of measuring viscosity is the Gardner-Holdt bubble tube method. The Gardner-Holdt bubble tube viscosity is run by adding a quantity of alkyd or vehicle to a predetermined height and sealing to a specified level, leaving a volume of air. The tube is inverted and the air bubble is then timed from one end of the tube to the other (or from one line to another) at an agreed-upon temperature. Air bubble time is compared to standardized tubes (Byk-Gardner).

### Cloudpoint

Cloudpoint is measured in order to obtain an indication of the solubility of hard resins and varnishes based on a specified solvent. The resin or varnish is combined with a specified solvent and a solution is prepared using the Chemotronic (Novomatics GmbH). The solution is heated until the pre-set maximum temperature is reached. The solution is allowed to cool at a fixed rate. When clouding occurs, the temperature is recorded.

## Acid value

Acid value is the number of milliliters of potassium hydroxide (at 0.1N) required to neutralize one gram of material (including alkyd, resin and varnish). A solution of testing material is prepared in a mixture of xylems/ alcohol (2:1). The value is determined with a known normality KOH solution using phenolphthalein as indicator.

## Methanol value

Methanol compatibility is an indication of the polarity of material. Materials are first dissolved in toluene and then titrated with anhydrous methanol until the solution becomes just cloudy. The temperature (agreed upon between customer and supplier) should be maintained throughout the measurement.

## Tack

The tack of varnishes is measured on an inkometer or tack-oscope at 32.2°C. Tack is read after a specified time at a specified speed, agreed upon between customer and supplier.

## Softening point

There are two methods for measuring softening point, Mettler Drop and Ring and Ball. In both methods, softening point is measured by filling a cup with molten resin. The excess material is removed using a slightly heated metal spatula. For Mettler Drop determination, the cup is placed in the Mettler apparatus and the heating program is started. The softening point is registered automatically by means of an optical sensor. For Ring and Ball determination, the cup is suspended in a glass container of glycerin and a steel ball is placed on its surface and the heating program is started. The softening point is the temperature at which the ball passes through the resin.

## Flow time

The flow time is time needed to empty the cup by flowing out the opening. The flow is the time (seconds) starting from the moment when the liquid flows out of the orifice of the cup to the point that the flow is interrupted, at a given temperature and concentration.

## pH value

pH is measured with a glass/calomel electrode filled with 3M KCl.

## Solids

The solid content of an acrylic dispersion is measured by drying one hour at 125°C.

## Molecular weight

Molecular weight is measured by means of gel permeation chromatography (GPC), relative to polystyrene standards.

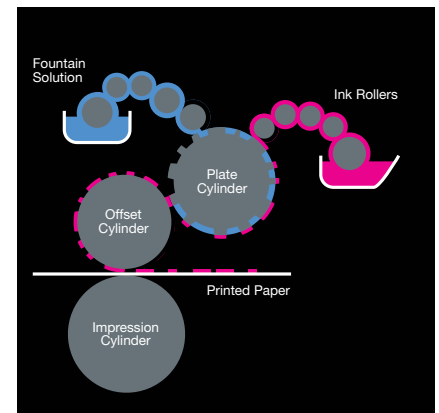
## Dilutability

The dilutability is the solvent (toluene) uptake (in percentage) of a varnish of certain concentration, diluted to a flow time in a special cup, at a given temperature.

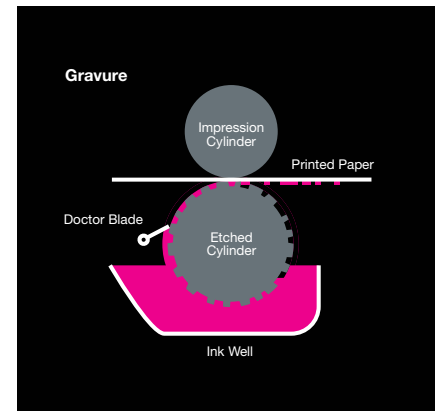
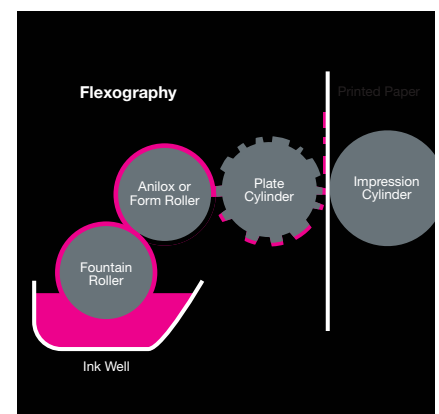
## Tg

The glass transition temperature (Tg) is measured by means of differential scanning calorimetry.

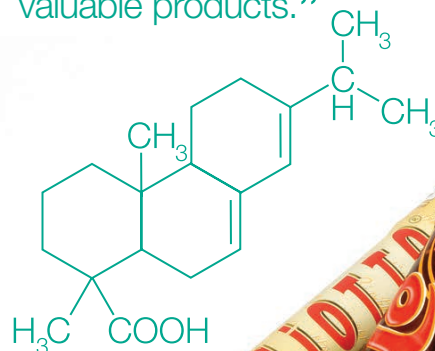
## The offset printing process



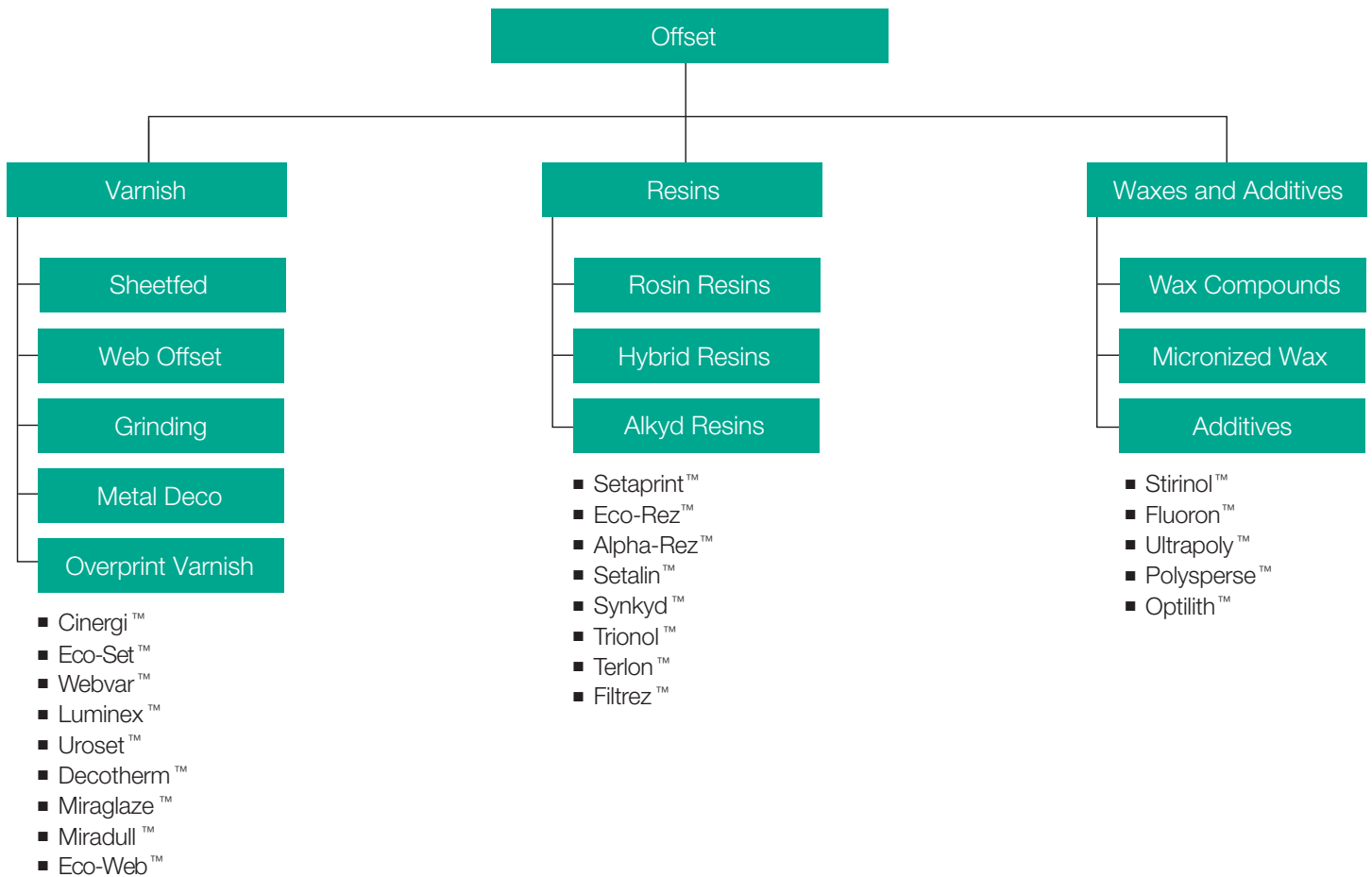
## The liquid inks printing process



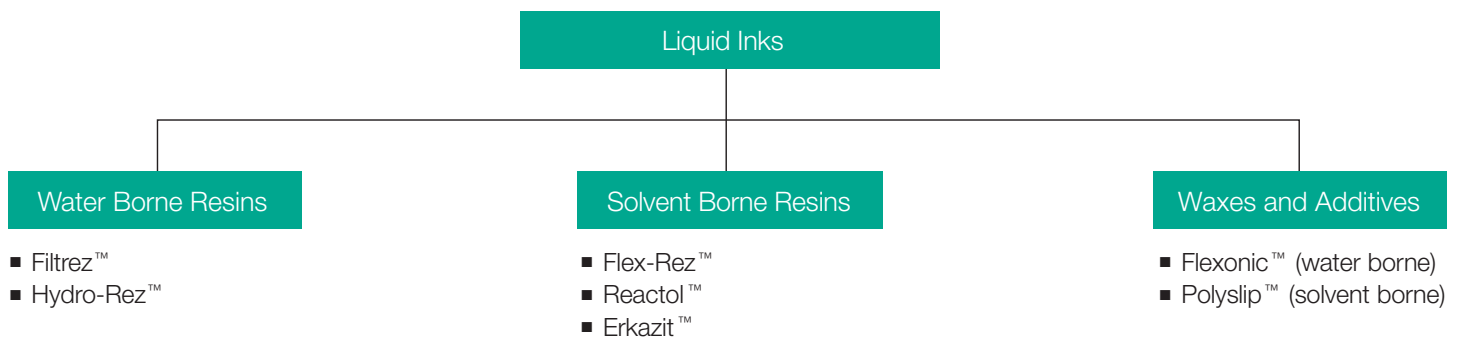
“Abietic acid is at the center of our technology and the means for creating valuable products.”



# Product Lines Offset



# Product Lines Liquid Inks

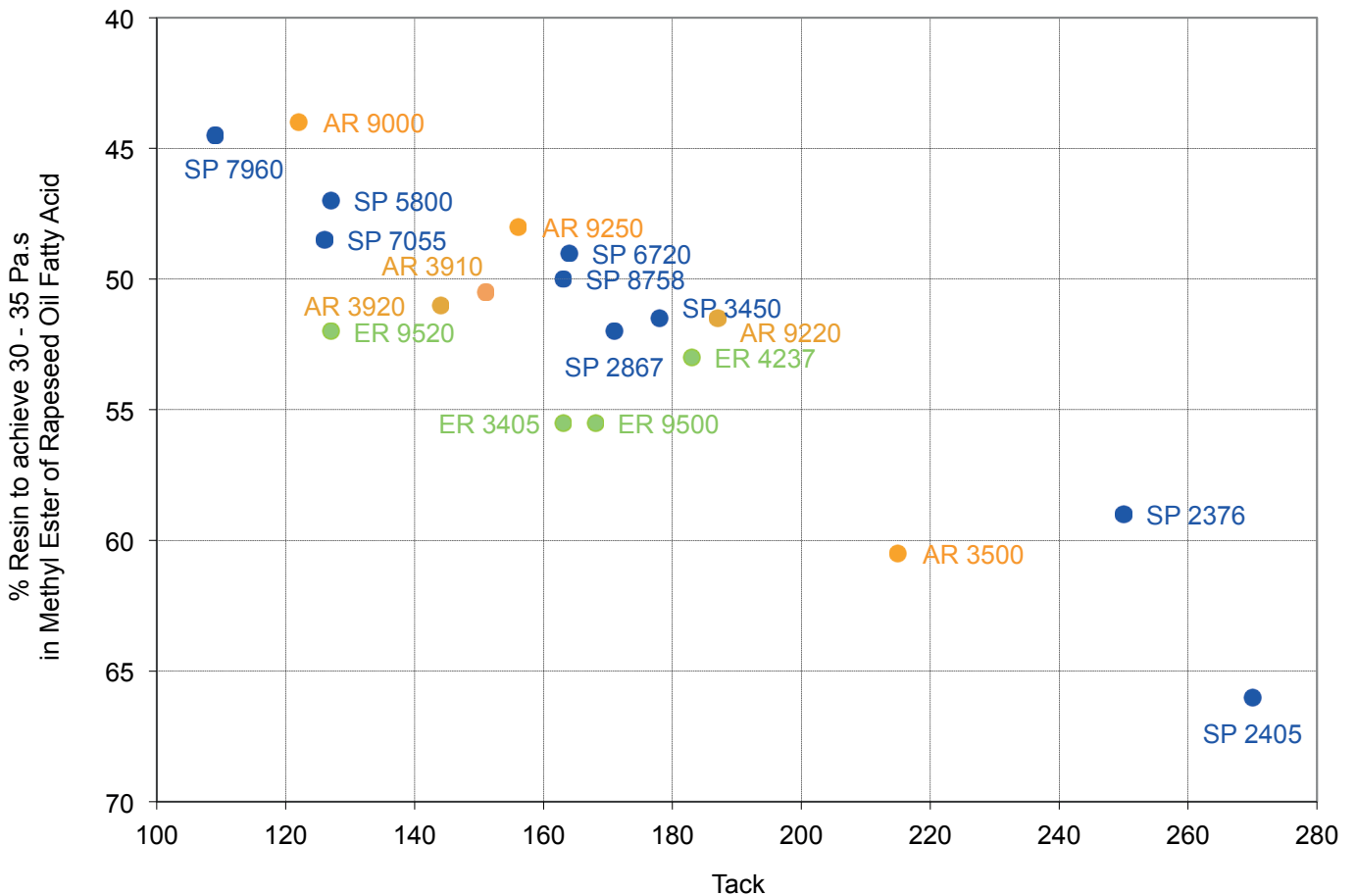
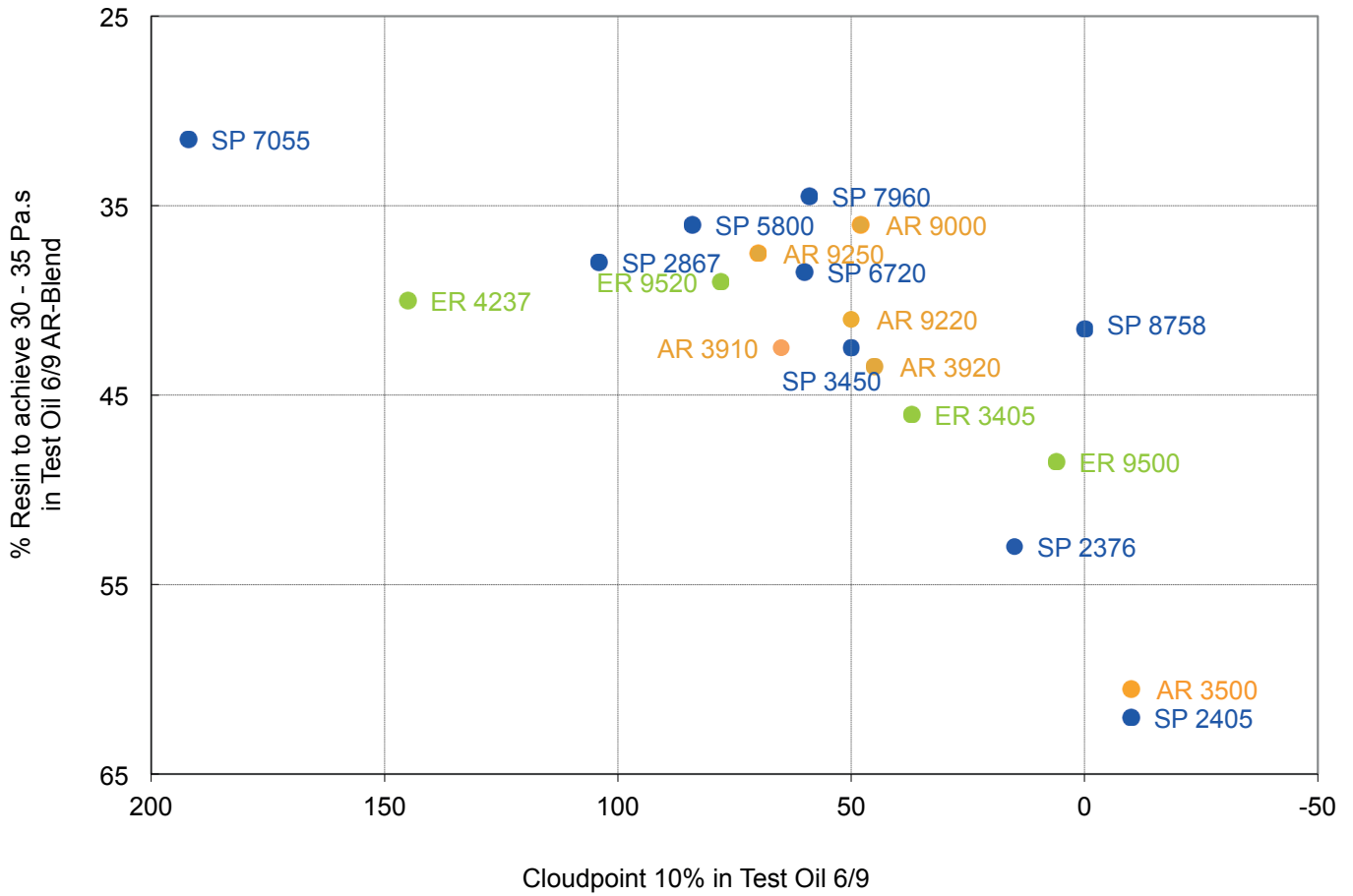


**Product Selections for Offset Printing** Characterization Typical Properties

Phenolic Modified Rosin Resins								
Product	Applications	Physical Characterization	Features	Characteristics				
				Viscosity, Eurocommit* [Pa.s]			Cloud point, Eurocommit** 10% solids	
				solids [%]	test oil	typical value	test oil	typical value [°C]
Setaprint™ 2376 E	High gloss webfed- and sheetfed offset inks. Wetting varnishes and flushes. Aromatic free inks and varnishes.	High soluble, medium low viscous resin.	Excellent pigment wetting. Very good co-resin (combine with high structured, high viscous and low soluble resins).	50	6/9	37	6/9 AF	134
Setaprint™ 2405 E	High gloss webfed- and sheetfed offset inks. Wetting varnishes and flushes. Aromatic free inks and varnishes.	High soluble, low viscous resin	Excellent pigment wetting. Very good co-resin (combine with high structured, high viscous and low soluble resins).	55	6/9 AFN	14	6/9 AFN	65
Setaprint™ 2867 E	Webfed (Heatset and Coldset) offset inks. Sheetfed offset inks. Waterless. Letterpress.	Medium low soluble, medium high viscous resin. Low polarity.	Very good gelling properties. Fast setting combined with high gloss. Very good water balance. Low tack.	40	6/9 ARB	42	6/9	104
Setaprint™ 3450 E	Sheetfed inks. Webfed (Heatset and Coldset) offset inks. Overprint varnishes.	Medium soluble, medium / low viscous resin.	Combination of high gloss with fast setting. Good gellability. High gloss in overprint varnishes.	40	6/9 ARB	17	6/9 AFN	120
Setaprint™ 5800 E	Webfed (Heatset and Coldset) offset inks. Sheetfed offset inks. Waterless. Letterpress	Medium soluble, high structured resin.	High speed presses, high gloss, low misting.	35	6/9 ARB	25	6/9	84
Setaprint™ 6720 E	Webfed (Heatset and Coldset) offset inks. Sheetfed offset inks. Waterless. Letterpress.	Medium soluble, medium high viscous, high structured visco-elastic resin. Low polarity.	Bisphenol A free version of Setaprint™ 6700E. High gloss and excellent setting. Improved water balance. Low misting. Low tack. Less gelling.	40	6/9 ARB	50	6/9 AFN	125
Setaprint™ 7055 E	For mineral distillate free inks and inks based on vegetable oil. Inks based on esters of tall oil fatty acid / vegetable oil fatty acid.	Very high structured visco-elastic resin. Very low solubility in mineral distillates. Very high viscosity.	Bisphenol A free version of Setaprint™ 7050E. High gloss and fast setting in mineral distillate free inks. Excellent for inks based on soya bean oil and ester solvents.	45	Methyl ester of rape oil fatty acid	18	6/9 ARB	117
Setaprint™ 7960 E	Webfed (Heatset and Coldset) offset inks. Sheetfed offset inks. Waterless. Letterpress.	Medium soluble, medium / high viscous, high structured visco-elastic resin.	High gloss and very fast setting. Good press stability. Very high stability or rheology under high shear conditions. Low misting. Low tack. Less gelling.	35	6/9 ARB	52	6/9 AFN	132
Setaprint™ 8758 E	Webfed (Heatset and Coldset) offset inks. Sheetfed offset inks. Waterless. Letterpress.	High soluble, medium / high viscous, structured visco-elastic resin.	Very high gloss and fast setting. Good press stability.	42,5	6/9 ARB	45	6/9 AF	132

\* Viscosity measured according to Eurocommit test method at 23 °C and 25 s<sup>-1</sup>. \*\* Cloudpoint measured according to Eurocommit test method, using Haltermann test oils.

Resins for Offset



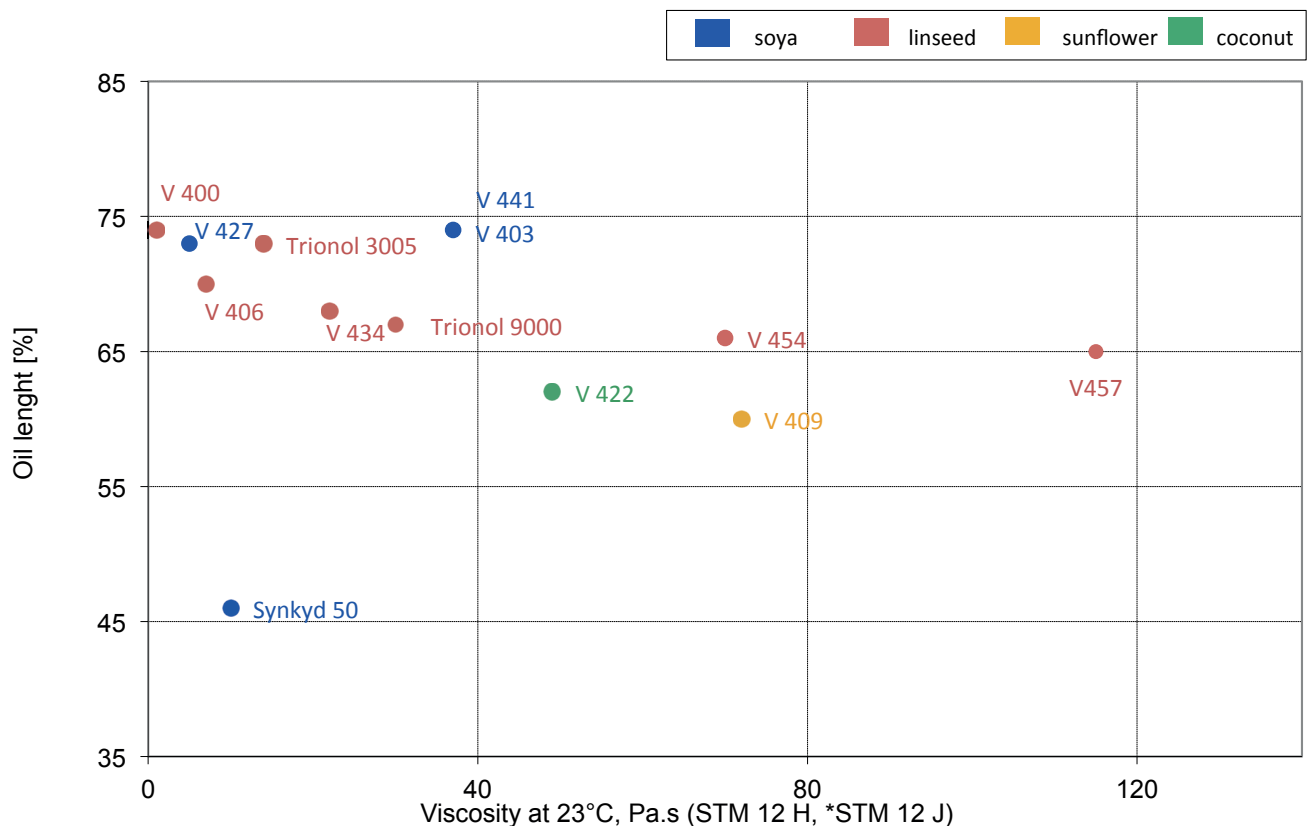
Phenol Free Rosin Resins								
Product	Applications	Physical Characterization	Features	Characteristics				
				Viscosity, Eurocommit* [Pa.s]			Cloud point, Eurocommit** 10% solids	
				solids [%]	test oil	typical value	test oil	typical value [°C]
Eco-Rez™ 3405 E	Webfed (Heatset and Coldset) offset inks. Sheetfed. Low odour inks. Flushes. Wetting varnishes. Overprint varnishes.	Medium viscous, medium soluble rosin ester.	Low odour. Low yellowing. Good pigment wetting.	47,5	6/9 ARB	50	6/9 AFN	127
Eco-Rez™ 4237 E	Webfed (Heatset and Coldset) offset inks. Sheetfed. Low odour inks. Flushes. Wetting varnishes. Overprint varnishes.	High viscous, low soluble rosin ester.	Fast setting. Higher melting point. Low odour. Low yellowing.	42,5	6/9 AR	18	6/9	145
Eco-Rez™ 9500 E	Webfed (Heatset and Coldset and Sheetfed). Flushes. Wetting varnishes. Overprint varnishes.	Low viscous, high soluble rosin ester.	Good pigment wetting. Low odour. Low yellowing. Low misting.	55	Methyl ester of rape oil fatty acid	22	6/9 AFN	125
Eco-Rez™ 9520 E	Webfed (Heatset and Coldset Sheetfed). Let down varnishes. Overprint varnishes.	Medium viscous, medium soluble rosin ester.	Let down resin. Low odour. Low yellowing. Low misting. Low tack.	50	Methyl ester of rape oil fatty acid	21	6/9	93

\* Viscosity measured according to Eurocommit test method at 23 °C and 25 s<sup>-1</sup>. \*\* Cloudpoint measured according to Eurocommit test method, using Haltermann test oils.

Hybrid Resins and Functional Hydrocarbon Resins								
Product	Applications	Physical Characterization	Features	Characteristics				
				Viscosity, Eurocommit* [Pa.s]			Cloud point, Eurocommit** 10% solids	
				solids [%]	test oil	typical value	test oil	typical value [°C]
Alpha-Rez™ 3500 E	Offset Inks, waterless inks.	Very high soluble , low viscous resin.	Very good pigment wetting resin, in particular for black and cyan.	60	6/9 AFN	55	6/9 AF	137
Alpha-Rez™ 3910 E	Offset Inks, waterless inks.	Medium soluble, medium/ high viscous hydrocarbon hybrid resin. Low polarity.	High gloss and fast setting , excellent water balance. Phenol free.	45	6/9 ARB	50	6/9	65
Alpha-Rez™ 3920 E	Offset Inks, waterless inks	Medium soluble, medium/ high viscous hydrocarbon hybrid resin. Low polarity.	High gloss and fast setting , excellent water balance. Good wetting properties. Phenol free.	45	6/9 ARB	35	6/9 AFN	165
Alpha-Rez™ 9000 E	Offset Inks, waterless inks.	Medium soluble, high viscous phenolic modified hydrocarbon resin. Low polarity.	Excellent water balance. High gloss.	35	6/9 ARB	28	6/9 AFN	130
Alpha-Rez™ 9220 E	Webfed (heatset and coldset) offset inks, sheetfed offset inks, waterless.	Medium soluble, medium/ high viscous structured visco-elastic hybrid resin, low polarity.	Low free phenol version of Alpha-Rez™ 9200 E. Very stable visco-elasticity, even at high temperatures, high stability of rheology under high shear condition, low tack.	42,5	6/9 ARB	40	6/9 AFN	135
Alpha-Rez™ 9250 E	Webfed (heatset and coldset) offset inks, sheetfed offset inks, waterless.	High soluble, high viscous structured visco-elastic hybrid resin, low polarity.	Very stable visco-elasticity, even at high temperatures, high stability of rheology under high shear condition, low tack.	40	6/9 ARB	50	6/9 AFN	120

\* Viscosity measured according to Eurocommit test method at 23 °C and 25 s<sup>-1</sup>. \*\* Cloudpoint measured according to Eurocommit test method, using Haltermann test oils.

Alkyd Resins							
Product	Applications	Features	Characteristics				
			Oil type	Oil length [%]	Acid value [mg KOH/g substance]	Viscosity at 23 °C at 25 s <sup>-1</sup> [Pa.s]	Methanol number [ml MeOH/5g substance]
					typical value	typical value	typical value
Setalin™ V 400 E	Wetting Varnishes. Flow additive.	Tin free version of Setalin™ V 401 E. Improves flow. Increased water pick-up. Good pigment wetting. High gloss.	blend	74	9	1	55
Setalin™ V 403 E	Sheetfed- and webfed offset inks. Metal deco inks. Low odour inks. Wetting and letdown.	Tin free version of Setalin V402. Low polarity. Good overall properties: gloss, flow, water balance.	soya bean	74	9	37	28
Setalin™ V 406 E	Sheetfed- and webfed offset inks.	Tin free version of Setalin™ V 405 E. Low bronzing. Good flow, very good pigment wetting. Gloss.	linseed	70	8	7	45
Setalin™ V 409 E	Metal deco inks (3-piece can), especially white inks. Low odour sheetfed inks	Tin free version of Setalin V407. Good pigment wetting. Low yellowing, low odour.	sunflower	60	8	72	45
Setalin™ V 422 E	Wetting Varnishes. Sheetfed- and webfed offset inks. Metal deco inks (3-piece can). Low odour inks.	Tin free version of V414. Low bronzing. Good flow, very good pigment wetting. Gloss. Due to character an improved hold out. Lower tack. Low odour. Easy de-inking.	coconut	62	8	49	70
Setalin™ V 427 E	Sheetfed- and webfed offset inks. Wetting and letdown.	Tin free. Low viscous soya oil based alkyd. Good overall properties: gloss, flow, water balance.	soya bean	73	8	5	50
Setalin™ V 434 E	Sheetfed- and webfed offset inks.	Tin free version of Setalin™ V 438 E. Fast setting. Good pigment wetting. High gloss.	linseed	66	8	22	40
Setalin™ V 441 E	Sheetfed- and webfed offset inks. Wetting and letdown.	Tin free. Cost -effective alkyd. Low polarity. Good overall properties: gloss, flow, water balance.	soya bean	74	10	37	30
Setalin™ V 454 E	Sheetfed- and webfed offset inks. Wetting and letdown. Letterpress and Screen inks	Tin free. Very good pigment wetting. High gloss. Low bronzing.	linseed	66	12	70	35
Setalin™ V 457 E	Sheetfed- and webfed offset inks.	Tin free version of Setalin V456. Low bronzing. Very good pigment wetting. High gloss.	linseed	65	10	115	30
Synkyd™ 50 E	Offset inks. Heatset. Coldset. Screen inks. Letterpress inks. Flush varnishes..	Tin free. High solubility in mineral distillates. Alkyd "alternative". Low polarity. Better water resistance. Higher gloss. Fast setting. Improved transfer.	soya bean	46	20	10	26
Trionol™ 3005 E	Sheetfed- and webfed offset inks.	Tin free version of Trionol™ 3000 E. Stable rheology under higher shear conditions. Low misting. Combines high gloss with fast set speed and good drying.	linseed	73	8	14	36
Trionol™ 9000 E	Intaglio (water-wipe) inks.	Tin free. Good through drying. Water dilutable. Additive to increase water pick-up.	linseed	67	44	30	>80





Varnishes								
Wetting varnishes								
Product	Applications	Features	Characteristics					
			Drying oil/ alkyd type	Mineral distillate type	Non- volatiles [%]	Viscosity at 25 °C at 25 s <sup>-1</sup> [Pa-s]		Tack, 1' at 100mpm
						typical values		typical value
Viscosity	p-Ostwald							
Uroset™ 100S E	Pigment concentrates. Flushes. Offset, metal deco and letterpress inks.	Best grinding properties. Excellent pigment wetting. High pigment loading.	linseed	260 - 290	85	10	0,99	N/A
Uroset™ 7150 E	Pigment dispersions. Sheetfed. Quickset. Gloss offset.	Excellent pigment wetting. High pigment loading. Combines fast setting with high gloss. Very good rheological stability and press stability. Good water balance.	linseed	260 - 290	70	77	0,92	210
Gloss varnishes								
Product	Applications	Features	Characteristics					
			Drying oil/ alkyd type	Mineral distillate type	Non- volatiles [%]	Viscosity at 23 °C at 25 s <sup>-1</sup> [Pa-s]		Tack, 1' at 100mpm
						typical values		typical value
Viscosity	p-Ostwald							
Cinergi™ 7000 E	Sheetfed. Letterpress, metal deco and screen inks. Mineral distillate free inks.	Very high gloss. Very good water balance when using alcohol based fountain solutions. Very good transfer.	linseed	N/A	100	400	0,90	215
Cinergi™ 8000 E	High gloss inks. Mineral distillate free inks.	Very high gloss. Alkyd replacement. Fast setting. Very good rub resistance. Forms tough films.	blend	N/A	100	65@ 30°C	0,90	210
Cinergi™ 8001 E	High gloss inks. Mineral distillate free inks.	Very high gloss. Alkyd replacement. Fast setting. Low water sensitivity. Very good rub resistance. Forms tough films.	blend	N/A	100	70@ 30°C	0,90	210
Sheetfed Varnishes Specialties								
Product	Applications	Features	Characteristics					
			Drying oil/ alkyd type	Mineral distillate type	Non- volatiles [%]	Viscosity at 23 °C at 25 s <sup>-1</sup> [Pa-s]		Tack, 1' at 100mpm
						typical values		typical value
Viscosity	p-Ostwald							
Cinergi™ 2000 E	Inks for non-absorbing substrates. Sheetfed- and webfed offset inks. Metal deco inks.	Film forming. Low bronzing. Good litho properties. Good adhesion.	blend	N/A	100	10	0,99	N/A
Cinergi™ 4170 E	Offset inks.	Very good rub and scuff resistance.	tung oil + linseed	N/A	100	135	0,95	300

Varnishes								
Sheetfed Varnishes Letdown								
Product	Applications	Features	Characteristics					
			Drying oil/ alkyd type	Mineral distillate type	Non- volatiles [%]	Viscosity at 23 °C at 25 s <sup>-1</sup> [Pa-s]		Tack, 1' at 100mpm
						typical values		typical value
Viscosity	p-Ostwald							
Eco-set™ 4335 E	Sheetfed, phenol formaldehyde free systems.	Lower tack (compared with ES 4330) and low misting, very good lithographic properties.	linseed/MER	N/A	100	90	0,84	160
Cinergi™ 2242 E	Sheetfed. Quickset. Letdown.	Gel varnish. High gloss and fast setting. Good water balance. Excellent rheology- and press stability. Low aromatic mineral oil.	linseed	260 - 290	57	125	0,79	120
Cinergi™ 7105 E	Mineral oil free sheetfed inks. Letdown.	Low misting. Good gloss. Good water behaviour.	blend + ester solvents	ester solvents	100	75	0,80	260
Cinergi™ 7106 E	Sheetfed. Quickset. Letdown.	Structured, visco-elastic letdown varnish. Fast setting combined with high gloss. Good press stability (on high speed presses). Very good litho properties and stability of rheology.	ester solvents	260 - 310	64	275	0,70	125
Cinergi™ 8505 E	Sheetfed, phenol formaldehyde free systems.	Low migration varnish. Structured, visco-elastic letdown varnish. Good press stability (on high speed presses). Very good litho properties resulting in excellent anti-misting behavior.	Sunflower + MER	N/A	100	95	0,84	165

Webfed Varnishes								
Product	Applications	Features	Characteristics					
			Drying oil/ alkyd type	Mineral distillate type	Non- volatiles [%]	Viscosity at 23 °C at 25 s <sup>-1</sup> [Pa-s]		Tack, 1' at 100mpm
						typical values		typical value
Viscosity	p-Ostwald							
Webvar™ 1100 E	Heatset. Coldset (news ink).	Highly structured letdown varnish. High gloss and excellent printability on fast running heatset presses. Very good dot sharpness. Good tack and press stability.	soya bean	240 - 290	60	88	0,84	110
Webvar™ 1200 E	Pigment dispersions. High gloss offset.	Replace alkyds in varnishes and inks. Fast setting. High gloss. Low water sensitivity. Good rub resistance.	soya bean	N/A	100	5,5	0,99	55
Webvar™ 1230 E	Coldset, for grinding and letdown.	Excellent transfer and litho behaviour, excellent printability and press stability.	N/A	280 - 310	44	27	0,95	170
Webvar™ 2317 E	Coldset. News ink. No heat web offset.	Fast set speed. Excellent printability.	soya bean	280 - 310	45	25	0,94	135

## Overprint Varnishes

### Base

Product	Applications	Composition	Features	Characteristics			
				Drying oil - type	Non-volatiles in mineral distillate* [%]	Viscosity at 23°C at 25 s <sup>-1</sup> [Pa.s]	Tack, 1' at 100mpm
						typ. value	typ. value
Miraglaze™ 1810 base E	Gelled overprint varnish base. Wet-on-wet and wet-on-dry.	Varnish without wax, no driers	Good gloss, fast setting.	blend	75 in 260 - 290	90	130 at 85 mpm
Miraglaze™ 8834 base E	Overprint varnish base. Wet-on-wet and wet-on-dry	Varnish with wax, no driers	Combines very high gloss with fast setting and high rub resistance. Good tack ability.	tung	60 in 260 - 290	12	90 at 85 mpm
Miraglaze™ 8909 base E	Gelled overprint varnish base. Wet-on-wet and wet-on-dry.	Varnish with wax, no driers.	Fast drying and setting in combination with very high gloss.	D.C.O / tung	71 in 260 - 290	10	75 at 85 mpm
Miraglaze™ 4910 base E	Heatset overprint varnish.	Varnish without wax, no driers	Combines good gloss with fast setting	soya bean	51 in 240 - 290	42	100 at 100 mpm

### Gloss

Product	Applications	Composition	Features	Characteristics			
				Drying oil - type	Non-volatiles in mineral distillate* [%]	Viscosity at 23°C at 25 s <sup>-1</sup> [Pa.s]	Tack, 1' at 100mpm
						typ. value	typ. value
Miraglaze™ 8834 E	Complete overprint varnish. Wet-on-wet and wet-on-dry.	Varnish with wax and driers.	Combines very high gloss with fast drying and high rub resistance. Cost-effective OPV.	tung	60 in 260 - 290	12	90 at 85 mpm
Miraglaze™ 8909 E	Complete overprint varnish. Wet-on-wet and wet-on-dry.	Varnish with wax and driers.	Combines very high gloss with high rub resistance. Excellent levelling.	D.C.O / tung	70 in 260 - 290	10	75 at 85 mpm

### Satin

Product	Applications	Composition	Features	Characteristics			
				Drying oil - type	Non-volatiles in mineral distillate* [%]	Viscosity at 23°C at 25 s <sup>-1</sup> [Pa.s]	Tack, 1' at 100mpm
						typ. value	typ. value
Miraglaze™ 3100 E	Complete satin overprint varnish. Sealer	Varnish with wax, driers and matting agent.	Very good drying. Good tack stability. Semi-matt (satin). Good rub resistance. Fast setting.	blend	82 in 280 - 310	25	85 at 100 mpm

## Metal Decorating

### Two Piece Can

Product	Applications	Product Description	Features	Characteristics		
				Solvent type	Acid value [mg KOH/g substance]	Viscosity at 23°C at 25 s <sup>-1</sup> [Pa.s]
					typical value	typical value
Decotherm™ 220 E	Dry offset / spindle printing.	Polyester resin in Tridecanol / Dobanol 23.	Gloss, printability MEK resistance.	TDA / Dobanol 23	50	200
Decotherm™ 255 E	Dry offset / spindle printing.	Catalyst (blocked).	Curing agent for polyester / melamine systems.	TXIB	105	2,5
Decotherm™ 260 E	Dry offset / spindle printing.	Polyester resin in Tripropylene glycol.	High performance, high gloss, fast cure, overcoatable with water-based coating.	TPG	26	100
Decotherm™ 290 E	Dry offset / spindle printing.	Structured polyester in TDA / TPG / mineral distillate.	Very low misting. Very fast curing. Low tack.	TDA / TPG / 260 - 290 distillate	35	105
Decotherm™ 295 E	Dry offset / spindle printing.	Structured polyester in TDA / TPG	MO free, Very low misting. Very fast curing. Low tack.	TDA / TPG	35	105

### Three Piece Can

Product	Applications	Product Description	Features	Characteristics		
				Solvent type	Acid value [mg KOH/g substance]	Viscosity at 23°C at 25 s <sup>-1</sup> [Pa.s]
					typical value	typical value
Decotherm™ 100 E	Lithographic / flat sheet printing.	Complete varnish with high gloss and good adhesion on steel, tin and aluminium.	Very fast drying.	Mineral distillate 260 - 290	N/A	50
Setalin™ V 403 E	Lithographic / flat sheet printing.	Soya bean oil alkyd for colours. Low odour.	Tin free version of Setalin V402. Fast setting.	none	9	37
Setalin™ V 409 E	Lithographic / flat sheet printing.	Sunflower oil based alkyd for mainly white inks.	Tin free version of Setalin V407. Low yellowing and low odour.	none	8	72
Setalin™ V 422 E	Wetting Varnishes. Sheetfed and webfed offset inks. Metal deco inks (3-piece can). Low odour inks.	Coconut oil based alkyd.	Tin free version of Setalin V414. Low bronzing. Good flow, very good pigment wetting. Gloss. Due to character an improved hold out. Lower tack. Low odour.	none	8	49

### Wax Compounds Sheetfed

Product	Applications	Type	Features	Characteristics		
				Vegetable oil (alkyd) type	Solids [%]	Average particle size [µm]
Ultrapoly™ 210 E	Sheetfed. Mineral distillate free inks.	PE compound.	100% non-volatile. Very high rub resistance and good gloss.	blend / alkyd	100	2,5
Ultrapoly™ 530 E	Sheetfed, Heatset. Mineral distillate free inks.	PE compound.	100% non-volatile. High rub resistance and good gloss. More cost-effective compared with UP210. Low migration inks.	ARSO	100	2,0
Ultrapoly™ 990 E	Sheetfed, Heatset. Mineral distillate free inks.	PE compound.	100% non-volatile. Very good pumpability. Very high rub resistance and good gloss.	blend	100	2,0
Ultrapoly™ 995 E	Sheetfed, Heatset. Mineral distillate free inks.	PE compound.	100% non-volatile. GMO free. Very high rub resistance and good gloss.	GMO free vegetable oil	100	2,3

### Micronized Waxes

Product	Applications	Type	Features	Characteristics	
				Melt Point [°C]	Average particle size [µm]
Polysperse™ E	Sheetfed, Heatset and liquid inks.	Micronized FT wax.	Good rub resistance and good slip.	98	3

### Ink and Press Additives

Product	Applications	Features	Form	Benefits
Optilith™ 3001 E	Offset inks. Flushes.	Water balance regulator. Mineral oil free.	Varnish	Regulates the water balance without influencing other ink properties. Gives a fast water break during flush production.
Optilith™ XJ12 E	Offset inks.	Anti-setoff.	Compound	Inhibits setoff, 15 % non VOC.

## Resins for Solvent Based Liquid Inks

### Polyketones

Product	Applications	Features	Characteristics		
			Acid value [mg KOH/g substance]	Hydroxyl number [mg KOH/g substance]	Melt Point [°C]
Reactol™ 1717	flexo and gravure inks and lacquers. Screen inks. Ballpoint inks. Jet inks.	Broad compatibility with solvents and other resins. Very good pigment wetting and high gloss. Reduces gel point of polyamide inks. Improves adhesion. Low colour.	< 1	270	100
Reactol™ 1717 H	flexo and gravure inks and lacquers. Screen inks. Ballpoint inks. Jet inks.	Broad compatibility with solvents and other resins. Very good pigment wetting and high gloss. Reduces gel point of polyamide inks. Improves adhesion. Low colour. Excellent solvent release. Higher melt point, improved solvent release. Improved heat resistance and block resistance.	< 1	270	120

### Co Solvent Soluble Polyamides

Product	Applications	Features	Characteristics		
			Acid value [mg KOH/g substance]	Hydroxyl number [mg KOH/g substance]	Melt Point [°C]
Flex-Rez™ 1074 CS C	Flexo and gravure inks and lacquers for polyolefin films. Cold seal release lacquers.	Good solvent release. High gloss. Excellent adhesion on treated films. Excellent cold seal release properties.	< 6	< 1	110
Flex-Rez™ 3370 CS C	Flexo and gravure inks and lacquers for polyolefin films.	Improved gel resistance.	< 6	< 1	100

### Alcohol Dilutable Polyamides

Product	Applications	Features	Characteristics		
			Acid value [mg KOH/g substance]	Hydroxyl number [mg KOH/g substance]	Melt Point [°C]
Flex-Rez™ 2433 AD C	Flexo and gravure inks and lacquers for polyolefin films.	Very high gloss.	< 6	< 1	120
Flex-Rez™ 5111 AD C	Flexo and gravure inks and lacquers for polyolefin films. Deepfreeze packaging (bread bags).	Excellent gel resistance. High gloss combined with excellent water and ice crinkle resistance.	< 4	< 1	100

### Alcohol Soluble Polyamides

Product	Applications	Features	Characteristics		
			Acid value [mg KOH/g substance]	Hydroxyl number [mg KOH/g substance]	Melt Point [°C]
Flex-Rez™ 1084 AS C	Flexo and gravure inks and lacquers for polyolefin films. Modifying resin.	Higher melt point. Very high heat resistance. No gel formation. Non-film forming.	< 15	< 1	185
Flex-Rez™ 1155 AS C	Flexo and gravure inks and lacquers for polyolefin films. Cold seal release lacquers.	Rapid solvent release. Very good NC-compatibility. Very good gel resistance. High gloss. Good cold seal release lacquer properties.	< 6	< 1	115
Flex-Rez™ 1255 AS C	Flexo and gravure inks and lacquers for polyolefin films. Cold seal release lacquers.	Cost effective version Flex-Rez™ 1155 AS C. Rapid solvent release. Very good NC-compatibility. Very good gel resistance. High gloss. Good cold seal release lacquer properties.	< 6	< 1	125

### Maleic and Fumaric Modified Rosin Resins. Polyesters and Phenolics.

Hydro-Rez™ 5626 A	Flexo and gravure inks and lacquers. Water / Alcohol soluble inks and lacquers.	Rapid water release in aqueous systems. Improves gloss and adhesion in aqueous systems. Good flexibility. Low viscosity.	200	< 15	160
Hydro-Rez™ 6500 A	Flexo and gravure inks and lacquers. Water / Alcohol soluble inks and lacquers.	Excellent rub resistance. Good adhesion on aluminium foil. Good flexibility. Low viscosity.	305	< 15	150
Reactol™ 5145 A	Flexo and gravure inks and lacquers. Water / Alcohol soluble inks and lacquers.	Improves gloss and adhesion. Is cross linkable. Excellent compatibility with cellulose resins (NC, CAP, CAB). Very good heat, product, water, alkali, oil, solvent and block resistance (when cured). Flexible and fast solvent release.	130	130	120

Solvent Borne Wax Dispersions						
Product	Applications	Type	Features	Characteristics		
				Solvent	Solids [%]	Average particle size [µm]
Polyslip™ FA06 E	Gravure and flexo inks.	Synthetic wax compound.	Combines good rub and scratch resistance with high gloss.	Iso-propanol	40	15
Polyslip™ FA09 E	Gravure and flexo inks.	PE compound.	Combines good rub and scratch resistance with high gloss.	Iso-propanol	25	10
Polyslip™ VM 55 E	Metallic base coats.	PE compound.	Quick drying. Minimizes migration.	Xylene / n-Butylacetate	6	8
Polyslip™ VM 70 E	3-piece internals and 2-piece externals. Gold lacquers.	Synthetic wax. Carnauba wax.	High slip, scratch, slip and levelling.	Iso-propanol / Solvesso 100	20	4
Polyslip™ VS86 E	Can coatings	Mixtures of waxes.	Excellent slip and scratch resistance with good levelling and no loss of gloss.	Solvesso 100, n-Butanol, Methoxy-propanol	15	8

Resins for Water Based Liquid Inks							
Self Crosslinking Acrylic Emulsions							
Product	Applications	Features	Characteristics				
			Solids [%]	Viscosity [mPa.s]	pH	Tg [°C]	Acid value [mg KOH/g substance]
Hydro-Rez™ 800 E	Flexo and gravure inks and OPV.	Self crosslinking emulsion with excellent adhesion, water resistance, drying properties, good temperature resistance (>200°C).	44	300	8,9	N / A	19
Hydro-Rez™ 820 E	Flexo and gravure inks and OPV.	Self crosslinking emulsion with excellent adhesion on Alum, good temperature resistance (>200°C).	40	72	8	15 (MFFT)	19
Acrylic Emulsions							
Product	Applications	Features	Characteristics				
			Solids [%]	Viscosity [mPa.s]	pH	Tg [°C]	Acid value [mg KOH/g substance]
Hydro-Rez™ 655 E	Flexo and gravure inks and OPV.	General purpose emulsion with excellent resolubility and heat seal properties. APE free.	51	100	2,1	140	200
Hydro-Rez™ 3013 E	Flexo and gravure inks. Inks for tissues, wall paper and wrapping paper.	High rub resistance. High grease resistance.	30	125	8,5	22	55
Maleic and Fumaric Modified Rosin Resins							
Product	Applications	Features	Characteristics				
			Solids [%]	Viscosity [mPa.s]	pH	Tg [°C]	Acid value [mg KOH/g substance]
Hydro-Rez™ 5626 A	Flexo and gravure inks and lacquers. Water / alcohol soluble inks and lacquers.	Excellent rub resistance. Good adhesion on aluminium foil. Good flexibility. Low viscosity.	100	-	-	N / A	200
Hydro-Rez™ 6500 A	Flexo and gravure inks and lacquers. Water / alcohol soluble inks and lacquers.	Rapid water release in aqueous systems. Improves gloss and adhesion. Good flexibility. Low viscosity.	100	-	-	N / A	305

Water Borne Wax Emulsions						
Product	Applications	Type	Features	Characteristics		
				Solvent	Solids [%]	Average particle size [µm]
Flexonic™ EN41 E	w / b inks and overprint varnishes.	PE wax dispersion.	Good rub and scratch resistance with gloss retention.	water	33	50 nm
Flexonic™ W378 E	w / b inks and overprint varnishes.	PE wax dispersion.	Excellent compatibility with good rub and scratch resistance with gloss retention.	water	55	6 µm

Resins for Publication Gravure Inks												
Product	Resin Type	Features	Characteristics		Flow time (typical value)				Dilutability (typical value)			
			Type of Metal(s)	Acid Value (mg KOH/g) typical value	Solids content (%)	Type of cup	Temperature (°C)	Value (s)	Solids content (%)	Type of cup	Final time (s)	Value (%)
Erkazit™ 4908 E	'Rosin based resinate..	Excellent pigment wetting. Very fast drying. Low viscosity and good solubility.	'Ca / Zn / Mg	28	45	DIN #4	20	30	45	GS #3	30	71
Erkazit™ 7861 E	Phenolic modified rosin resin .	Good dilutability. Fast drying. Good block resistance.	N / A	27	35	DIN #4	20	70	35	GS #3	30	160



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